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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/543,604	04/05/2000	Dieter Mueller	81208-246298	6492

7590 05/21/2003

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EXAMINER
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LEE, HWA S

ART UNIT	PAPER NUMBER
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2877

DATE MAILED: 05/21/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application N .

09/543,604

Applicant(s)

MUELLER ET AL.

Examiner

Andrew H. Lee

Art Unit

2877

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 22 April 2003.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-25 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-25 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 10.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

## DETAILED ACTION

### *Claim Rejections - 35 USC § 103*

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1-7, 10-13, 16-19, 22, and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Muller (6,271,925) in view of Elssner et al. (DD 261422).

As for claims 1, 2, 6, 7, 11, 16, 17, and 18, Muller shows an apparatus and method for measuring two opposite surfaces of a body comprising:

- a light energy generating device (1);
- a collimator (7);
- a diffraction grating (8);
- a second diffraction grating (10);
- at least one receiving collimator (11);
- at least one camera (16).

Muller does not show the reflecting surface (reference surface). Elssner et al (Elssner hereinafter) show an interferometer for measuring surface smoothness of an object wherein a reference reflecting surface is used to reflect the other first order diffraction (-1 order diffraction). The use of the reference surface allows for better quality of measurements due to the use of combining a first order diffraction with another first order diffraction rather than combining a first order diffraction with a zero order diffraction where intensities of the two

Art Unit: 2877

orders can be different. In addition, the recombining of beams originating from the same portion of the illumination beam remain constant thus removing errors due to inconsistencies of the original beam.

Therefore, at the time of the invention, one of ordinary skill in the art would have been motivated to modify Muller to use a reference reflecting surface of Elssner in order to obtain better surface measurements.

As for claims 4, 13, Muller shows the calibrating of the interferometer in column 3, lines 17+.

As for claims 5, 16, and 23 the image aspect ratio is altered by the grating and mirrors (12-14).

3. Claims 3, 10, 12, and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Muller and Elssner as applied to claims 1, 2, 6, 7, 11, 17, and 18 above, and further in view Kulawiec et al (5,719,676). Muller and Elssner fail to expressly show the blocking of zero order light. Kulawiec et al (Kulawiec hereinafter) shows in Figure 7, the measurement of opposite sides of a body wherein zero order light is blocked (column 9, second paragraph). At the time of the invention, one of ordinary skill in the art would have modified Muller and Elssner to block zero order light in order to obtain clearer measurements by blocking zero order light from interfering with combined beam that contains measurement information.

Art Unit: 2877

4. Claims 8, 9, 14, 15, 20, and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Muller and Elssner as applied to claims 1, 2, 6, 7, 11, 17, and 18 above, and further in view of in view of Ai et al. (5,471,303).

Muller and Elssner fail to expressly show an interferometric normal incidence inspection device. Ai shows a combination of two interferometers for surface profile measurement in a single apparatus comprising a light emitting device (34 or 36), a beamsplitter (24), a collimator (lens in 14), and a semitransparent reflecting mirror (24). Ai et al suggest the use of a second normal incident interferometer to improve the accuracy of height measurements made by a first normal incident interferometer. At the time of the invention, one of ordinary skill in the art would have used a second interferometer in order to improve the measurements of the first interferometer since the second interferometer provides a redundant measurement or the second interferometer has better a range of height measurements or improved accuracy.

Papers related to this application may be submitted to Technology Center (TC) 2800 by facsimile transmission. Papers should be faxed to TC 2800 via the PTO Fax Center located in CP4-4C23. The faxing of such papers must conform with the notice published in the Official Gazette, 1096 OG 30 (November 15, 1989). The CP4 Fax Center numbers are 703-872-9318 for regular communications and 703-872-9319 for After Final communications

If the Applicant wishes to send a Fax dealing with either a Proposed Amendment or for discussion for a phone interview then the fax should:

a) Contain either the statement "DRAFT" or "PROPOSED AMENDMENT" on the Fax Cover Sheet; and

b) Should be unsigned by the attorney or agent.

This will ensure that it will not be entered into the case and will be forwarded to the examiner as quickly as possible.

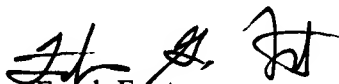
Art Unit: 2877

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Andrew Hwa Lee whose telephone number is (703) 305-0538. The examiner can normally be reached on M-Th. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Frank Font can be reached on 703-308-4881.



Andrew Lee  
Patent Examiner  
Art Unit 2877  
May 8, 2003/ahl



Frank Font  
Supervisory Patent Examiner  
Art Unit 2877